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ABSTRACT

This investigation was designed to determine the effects of a perceptual modeling concept on the verbal behaviors of student teachers in their student teaching experience. The major objectives were 1) to determine the effects on verbal behavior of a videotape versus a verbal presentation of an interaction analysis system, and 2) to identify those behaviors most affected by a perceptual modeling concept of a modified Flanders Interaction Analysis System. The 52 subjects included 14 social studies majors, 14 language arts majors, 14 science majors, and 10 math majors, and they were randomly assigned to experimental and control groups. The subjects were observed in school situations by three observers using a modified Flanders instrument. The interaction analysis raw data were recorded on IBM cards and mean percent scores and ratios for each group were obtained through a special computer program. A multiple t test program was used to compare the selected verbal variables of the groups. The findings indicated that student who received a perceptual modeling concept presentation of interaction analysis during their preservice training showed significantly different verbal behavior in their classroom assignments as measured by a modified Flanders System of Interaction Analysis than those who did not. [Related to ED 048 110.] (MBM)

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The Effect of Video Taped Modeling Procedures
on the Verbal Behaviors of Student
Teachers

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SUMMARY

This investigation was designed to determine the effects of a perceptual modeling concept, presented during the pre-service experience, on the verbal behaviors of student teachers in their student teaching experience. Within this framework the major purposes of the study were:

- (1) To determine the effects of a video tape modeling concept versus a verbal only presentation of an interaction analysis system on the verbal behaviors of student teachers.
- (2) To identify those categories or behaviors which were most affected by a perceptual modeling concept of a modified Flanders Interaction Analysis System.

The fifty-two subjects who comprised the sample for this study were drawn randomly from a larger population of one hundred sixty-five students in Education 120, a general methods course immediately preceding the student teaching experience at West Virginia University, the second semester of the 1969-70 school year. The sample consisted of fourteen social studies majors, fourteen language arts majors, fourteen science majors and ten math majors.

The fifty-two pre-service teachers were randomly assigned to either the experimental group or the control group. The experimental group received instruction through perceptual modeling of the ten categories of a modified Flanders Interaction Analysis System presented via video tape and discussion. The control group received instruction through discussion and other verbal means only concerning

the concepts of the modified Flanders Interaction Analysis System.

During the student teaching experience, the subjects were observed in their assigned individual school situations by three trained and reliable observers utilizing a modified Flanders instrument for measuring their classroom verbal behavior. Verbal behavior was recorded in each of five observations of fifteen minutes each for each of the fifty-two subjects. Observations were scheduled at the beginning, the middle, and toward the end of the student teaching experience. During the observation period, which spanned the student teaching experience, three reliability checks were conducted for the observers (re: appendix F). Before the observation period, the observers had participated in a training session, consisting of approximately twelve hours of interaction analysis instruction.

Upon completion of the data gathering, the interaction analysis raw data for each subject was preserved on IBM cards. From these, appropriate mean percent scores and ratios for each group were arrived at by means of a specially prepared computer program using the West Virginia University 360/70 computer. A matrix printout supplied other data for the two groups. All data needed for comparing the teacher behavior hypotheses were thus derived. A multiple t test program was used to compare the selected verbal variables of the two groups.

In conclusion, the findings of the study gave evidence to indicate that student teachers who received a perceptual modeling concept presentation of interaction analysis during their pre-service training

did show significantly different verbal behavior in their classroom assignments as measured by a modified Flanders System of Interaction Analysis with a slight modification. These student teachers in their classrooms (1) used more acceptance of student feelings, (2) used more praise, (3) used more acceptance and clarification of student ideas, (4) used less lecture, (5) spent less time in direction giving, (6) spent less time in criticizing students, (7) stimulated more student talk, (8) used less extended direct talk, (9) used more indirect talk, and (10) used more extended indirect talk.

CHAPTER I

PROBLEM AND HYPOTHESES

Introduction

With the availability of video equipment in most colleges, another dimension in teacher education has been added. Techniques such as video taped feedback, micro-teaching, interaction analysis and simulation have been explored for incorporation into the teacher education program utilizing the medium of video.

Interaction analysis has been proved a valuable teacher education instrument in the pre-service program, Furst (81), Hough and Ober (84), and Zahn (91); also, it has provided teacher educators with an objective instrument for assessing teacher behavior, Furst (81), Flanders (13), Lohman, Ober, and Hough (22).

The modeling concept has been explored and developed recently for use in pre-service teacher education by Orme (88), and Young (90). These studies revealed that student teachers viewing a perceptual model tended to incorporate more of the modeled teaching behaviors into their teaching than those who were trained by a symbolic model. Further, a combination of the two methods was even more effective than either one alone, Orme (88), Young (90).

Allen et al. (78) studied the effects of both positive and negative models on teacher behavior. The use of the positive model during training proved to be more effective, as the teachers here attempted

to incorporate more of the modeled behavior into their later lessons.

In all, three major theories concerning learning through imitation and observation have emerged. Bandura (8) presents a complete summary of these theoretical viewpoints. However, a brief review will suffice at this point.

Miller and Dollard (27) set forth the instrumental conditioning theory. One learns a specific behavior by observing a model's responses to various stimuli either because the model is reinforced, which vicariously reinforces the observer, or the observer is directly reinforced as he watches the model's responses.

Mower (30), in his sensory feedback theory, theorizes that the learner or observer assigns a positive value to a model's behavior as a result of the rewards administered to the model. The observer can then have the positive experience by reproducing the model's behavior.

More recently, Bandura (44) has developed the stimulus contiguity and mediational theory which sets forth the idea that the learner forms sensory images as he observes a model. These sensory images become structured, and through contiguity the perception responses are strengthened. Bandura also postulates that the learner acquires verbal representations of the model's behavior, which are associated with the perceptual images, suggesting that if the observer verbalizes the model's behavior he will acquire it more readily.

Statement of the Problem

Both modeling and interaction analysis are revealed as important

techniques in the shaping of teacher behavior, (15, 18, 30, 36, 39, 70). However, due to the lack of studies exploring this area, more research should be undertaken concerning the effects of modeling on the behavior of pre-service teachers. Further, because most modeling research to date has primarily involved young children as subjects, added research in modeling using adult teacher trainees as subjects should be considered. While the experimental literature suggests that both modeling and interaction analysis can effectively change teacher behavior, (15, 18, 30, 36, 39, 79) little is known about the relative effectiveness on teacher behavior of the two combined processes, such as providing modeling through an interaction analysis framework.

This study is intended to determine the effects of a modeling concept of a modified Flanders Interaction Analysis System on the verbal behaviors of secondary student teachers.

The use of a video-tape modeling presentation of an interaction analysis system should make each modeled teaching behavior more precise and specific. As a result, this presentation should make the behavior more conspicuous and more easily perceived by student teachers, and help them incorporate such behavior into their own teaching.

Purpose of the Study

This research project intended to determine the effects of a perceptual modeling concept, presented during the pre-service experience, on the verbal behaviors of student teachers in their student teaching

experience. Within this study's framework the following purposes are appropriate:

1. To determine the effects of a perceptual modeling concept of a modified Flanders Interaction Analysis System on the verbal behaviors of secondary student teachers.
2. To identify those categories or behaviors which are most affected by a perceptual modeling concept of the modified Flanders Interaction Analysis System.

Sample and Population

The subjects for this study consisted of two samples of twenty-six students each, randomly selected from Education 120, second semester, 1969-70, West Virginia University. The parent population consisted of one hundred sixty-five student teacher trainees. All students in Education 120 are Secondary Education trainees and have completed all required work except for Education 120 and the student teaching experience. Education 120 is a pre-service course taken immediately before the student teaching experience.

Hypotheses

The problem of this research study is stated in the null hypotheses form as: There is no difference in the observed verbal teaching behavior of student teachers during the student teaching experience in the following two situations:

1. A perceptual modeling concept presentation of a modified Flanders Interaction Analysis System during the pre-service experience.
2. A verbal only or symbolic modeling concept presentation of a modified Flanders Interaction Analysis System during the pre-service experience.

The specific null hypotheses are:

- H1 There will be no difference between the percentages of direct teacher talk of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the direct teacher talk of student teachers trained through a symbolic modeling only concept in a modified Flanders System.
- H1a There will be no difference between the two groups of student teachers in lecturing.
- H1b There will be no difference between the two groups of student teachers in giving directions.
- H1c There will be no difference between the two groups of student teachers in giving negative criticisms, reprimands, and corrective feedback.
- H1d There will be no difference between the two groups of student teachers in the extendedness of direct teacher talk.
- H2 There will be no difference between the percentages of indirect teacher talk of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the indirect teacher talk of student teachers trained

through a symbolic modeling concept in a modified Flanders System.

H2a There will be no difference between the two groups of student teachers in asking questions.

H2b There will be no difference between the two groups of student teachers in accepting and clarifying student ideas.

H2c There will be no difference between the two groups of student teachers in giving praise and encouragement.

H2d There will be no difference between the two groups of student teachers in the acceptance of student feelings.

H2e There will be no difference between the two groups of student teachers in the extendedness of indirect teacher talk.

H3 There will be no difference in the percentages of student talk in classes taught by student teachers who have been trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the student talk in classes taught by student teachers trained through a symbolic modeling concept in a modified Flanders System.

H3a There will be no difference in the emitted student talk in the classes taught by the two groups of student teachers.

H3b There will be no difference in the elicited student talk in response to narrow teacher questions or requests in the classes taught by the two groups of student teachers.

H3c There will be no difference in the length of specific episodes of student talk in the classes taught by the two groups of student teachers.

- H4 There will be no differences between the S/T ratio of student teachers trained through the perceptual modeling concept in a modified Flanders System of Interaction Analysis and the S/T ratio of student teachers trained through the symbolic modeling concept in a modified Flanders System.
- H5 There will be no difference between the I/D ratio of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the I/D ratio of student teachers not so trained.
- H6 There will be no difference between the revised I/D ratio of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the revised I/D ratio of student teachers not so trained.

Basic Assumptions

The present study is based on the following assumptions:

1. A modeling concept technique can be effectively used during the pre-service experience for the purpose of shaping student teaching verbal behavior.
2. A modeling technique can be used effectively during the pre-service experience for the purpose of teaching interaction analysis in a more perceptive manner.
3. Flanders Interaction Analysis System is a reliable means for assessing the verbal behavior of the teacher in the classroom situation.

4. The verbal classroom behavior of the student teacher while in the classroom situation is an adequate sample of his total teaching behavior.
5. A modeling presentation of a modified Flanders Interaction Analysis System during the pre-service experience can be used effectively for the purpose of transferring theory to practice through micro-simulation.

Limitations of the Study

The term limitations in this research was defined as those variables which cannot be adequately controlled within the study design, and cannot be satisfactorily accounted for in the analysis and interpretation of the data:

1. Effects of the college supervisor's influence on the student teachers' verbal behavior.
2. Effects of the cooperating or critic teacher's influence on the student teachers' verbal behavior.
3. Effects of the existing differences, such as sex, socio-economic, and cultural background, etc., in pupils comprising the various public school classes assigned to the teacher-trainees during their student teaching experience.
4. Effects of the type of activity being conducted at the time of the observation and data collection.
5. Disposition of the class at the time of the observation.

Delimitations of the Study

For the purposes of the present study, the term delimitation may be defined as a description of the limits or boundaries set, beyond which the study is not intended to investigate.

This study, primarily due to its exploratory nature, is designed to investigate or uncover, not to examine in depth. The following factors are set forth as delimitations of this study:

1. Fifty-two of the total population of one hundred sixty-five secondary pre-service teachers at West Virginia University were selected to participate in this study.
2. The study design allowed for five observations of the actual student teaching situations of the fifty teacher trainees. Additional observations may have made a difference in the results.
3. No preference was given to sex or age in the selection of subjects. The use of an all male or all female selection might have altered the results.
4. The study utilized a modified Flanders Interaction Analysis System which is designed to measure the verbal behavior dimension of the classroom teaching-learning situation only.
5. The subjects participating in the study represented a cross section of four subject matter areas. The limiting of selection to one subject area might have brought about different results.

Definition of Terms

Direct teacher talk - Teacher verbal behavior which theoretically restricts student freedom of response and shifts the focus of verbal behavior to the teacher.

Extended talk - Continuous talk by one person which lasts more than three seconds and receives more than one tally in the Flanders' System.

Flanders System of Interaction Analysis - A formal system designed to categorize the teacher talk and student talk which occurs in a classroom. (For a definition of each category in this system, see Appendix A, page 60).

Flexibility - A measure of teacher ability to control verbal behavior in order to use a variety of matrix cells each representing a different categorical sequence expressed as a direct relationship of the number of occupied cells in a given matrix, i.e., the greater the number of occupied cells, the greater the teacher flexibility.

I/D ratio - A mathematical comparison of the teacher's indirect verbal talk to his direct verbal talk calculated by dividing the total amount of direct teacher talk. Thus, the totals in columns 1, 2, 3, and 4 are divided by the totals in columns 1, 2, 3, and 4, plus 5, 6, and 7.

Indirect teacher talk - Teacher verbal behavior which theoretically

promotes student freedom of response and shifts the focus of verbal behavior to the student.

Instrumental conditioning - Response modification or change involving the active participation of the subject. Reward, or reinforcement, is an integral part as in need satisfaction and relief from tension. There is a feedback from the rewarding stimulus which follows the response the subject is learning.

Mediating response - Responses of attentiveness to certain cues or stimuli which result in better learning from problem to problem, or which result in the formation of learning sets.

Modeling - Imitation learning through the utilization of live or simulated performances.

Modeling concept - A video-taped teaching episode emphasizing a specific teaching behavior or skill.

Observation learning - Learning through imitation or the viewing of a model's action.

Simulation - A type of role playing episode in which the members recreate hypothetical classroom situations or teacher-pupil behaviors.

Perceptual model - (See perceptual modeling concept)

Perceptual modeling concept - In teacher education this term refers to a video-taped teaching episode or segment in which a specific teaching behavior is exaggerated.

Revised I/D ratio - A mathematical comparison of the positive affective teacher talk to the negative affective talk.

Sensory feedback - A sensing-and-correcting process in which the results of a particular behavior or action provide feedback via the senses, which serve to modify further like behavior of the individual.

Stimulus contiguity - Various stimuli present at the time of a given response, which on their recurrence tend to evoke that same response.

S/T ratio - A mathematical comparison of the students' talk to the teacher's talk calculated by dividing the total amount of student talk by the total amount of teacher talk.

Symbolic model - A written description of the specific teaching behavior to be acquired by the teacher. It includes a rationale for using the behavior.

Verbal behavior - Teacher talk and student talk which is audible and discernible and occurs under classroom conditions.

CHAPTER II

PROCEDURES AND METHODOLOGY

Introduction

This chapter presents the techniques used in the investigation of the two questions basic to the study: (1) What effect does a perceptual modeling concept presentation of a modified Flanders Interaction Analysis System have on the verbal teaching behavior of secondary student teachers? (2) What categories or behaviors of the Flanders System are most affected by a perceptual modeling concept of Flanders Interaction Analysis System?

Sampling Procedures

Fifty-two subjects, both male and female, were selected from the total population of one hundred sixty-five secondary teacher trainees who were enrolled in Education 120 during the second semester of the 1969-70 college year. Education 120 is a general methods pre-service course taken by students immediately preceding the student teaching program at West Virginia University.

The subjects were selected by using the table of random numbers. The selection process began by the listing in alphabetical order all teacher-trainees according to their content area specialization. The content areas were social studies, science, language arts, and math. Each student was given a number. After beginning with an arbitrary

finger point, the first student selected was placed in treatment group one and the second was placed in treatment group two, and so on, until the sampling was completed for the content area. This procedure was followed for each of the other content areas until the total sampling was completed. Only eleven math teacher-trainees were available; therefore, ten of the total math teacher-trainee population were selected for this study. In the other content areas, fourteen social studies majors were randomly chosen from a total of twenty; fourteen language arts majors were chosen from a population of twenty-three; and fourteen science majors were selected from a total of seventeen. Each of the treatment groups except math, which had ten subjects, contained fourteen subjects each for a total of fifty-two subjects.

All subjects had completed all of the prerequisite courses prior to student teaching. Since the subjects were sampled from all Education 120 classes, special instructions were given to the class instructors concerning their students in experimental and control groups.

Design Explanation

Group A or the Experimental Group - This group received instruction through the modeling of the ten categories of a modified Flanders Interaction Analysis System presented via video tape and discussion during a four-hour instructional block of Education 120. This time period was adequate as Young (90) and Lange (86) found that a brier exposure to the specific modeled behavior was most effective for learning a complex verbal teaching behavior. During this instruction, which was done by

the researcher, the students were first introduced to a modified Flanders System of Interaction Analysis by discussion and handout sheets showing the various categories. (re: appendix A). The students were then shown the procedure of recording classroom behavior utilizing the recording sheet. The matrix was then discussed.

Next, a video tape modeling concept of a modified Flanders System of Interaction Analysis was presented to the students. After each modeled category had been viewed, the students discussed the observed behavior. Live modeling of the categories by the students followed the video-tape presentation. The instruction ended with a general discussion of the modified System and a summary.

Group B or the Control Group - This group received instruction through discussion and other verbal means only concerning the concepts of a modified Flanders Interaction Analysis System during a four-hour instructional block of Education 120. (re: appendix A)

Instruction for the experimental group was done by the principal researcher. Instruction for the control group was done by a teacher of many years' experience who was enrolled in the doctoral program full time as a graduate assistant and instructor in the Education 120 program.

The instruction was divided into two parts. First, the students listened to an audio tape recording of a typical classroom lesson. They then proceeded to analyze the lesson using the concepts contained in the modified Flanders System without reference to a specific system.

In the second part, they were given a sheet which asked them to list those characteristics present in a healthy classroom atmosphere. Upon completion, they then discussed those characteristics.

Video Recording Procedures

A video taped presentation of a modified Flanders Interaction Analysis System was prepared prior to the experiment. The tape was divided into three parts: (1) A brief taped introduction to the category; (2) A brief taped introduction to the modeling of the category behavior; and (3) A brief taped series (usually 3) of simulations demonstrating the behavior of each category.

The introduction to each of the ten categories was presented by Dr. Kenneth Murray and the introduction to the simulations was presented by the researcher. Instructors for each of the category simulations consisted of doctoral students working in the Education 120 program who were familiar with Flanders' System; the students in the simulations were played by previous teacher-trainees who had finished Education 120 and who were also familiar with Flanders' System.

A paper entitled "Modeling Concepts of Flanders System of Interaction Analysis" (re: appendix B) was prepared by the researcher and served as a script and guide for the video-taped presentation. The paper consists of classroom situations illustrating each of Flanders' ten categories. The situations are representative simulations of secondary classroom situations in the content areas of math, science,

social studies, and language arts.

In its final form then, the video tape represented taped teaching episodes or simulations emphasizing specific teaching behaviors or categories representative of the Flanders Interaction Analysis System. Preceding each category or behavior was an introduction to the category and an introduction to the simulation.

The equipment used included one Sony video recorder, one accompanying camera, one tape, one microphone and a video monitor. The classroom and taping situation is illustrated in figure 1, page 21.

Instrumentation

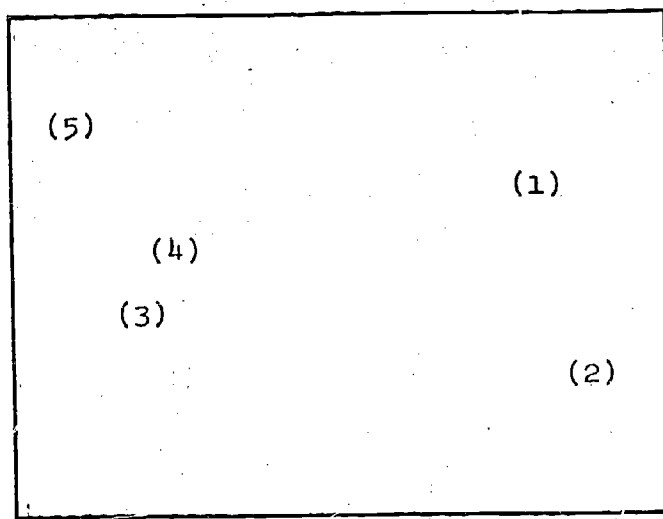
A modified Flanders System of Interaction Analysis was the principal instrument used to collect the data regarding the verbal behaviors of the student teachers in their respective school situations, which were the dependent variables.

The Flanders System of Interaction Analysis is concerned with verbal behavior only and provides a reliable instrument which can be used to quantify objectively verbal behavior in a classroom situation.

This technique for measuring classroom interaction was first developed as a research tool and the Flanders System is one of the more widely used and known. A complete description of the Flanders System of Interaction Analysis with the slight modification used in this study appears in appendix A.

Figure 1

A DIAGRAM OF THE CLASSROOM AND TAPING SITUATION



(1) Model Teacher

(4) Microphone

(2) Students

(5) Recorder, tape, monitor

(3) Camera

Data Collection

During the student teaching experience, the subjects were observed in their respective school situations by three trained, reliable observers utilizing a modified Flanders instrument for measuring classroom verbal behavior or interaction. The three observers, all doctoral candidates at West Virginia University, participated in a training program consisting of twelve hours prior to actual observation. During the observation period, the observers underwent three reliability checks (re: appendix C).

Verbal behavior was recorded in each of five observations of fifteen minutes each for each of the fifty-two subjects of this study. To insure a representative sampling of teacher behavior, the observations were conducted at the beginning, in the middle, and toward the end of the student teaching experience. Also, classroom lessons were observed for each individual at various times, such as at the beginning of the lesson, during the middle, or toward the latter part of the lesson.

The interaction analysis data for each subject and group were then recorded on a recording sheet by the observers. The raw interaction analysis data were then arranged and punched on IBM cards. All raw data after being preserved on IBM cards were then fed into an IBM 360-70 computer. A special computer program processed the raw interaction analysis data and appropriate ratios and means were computed and printed out.

The interaction analysis data describing the dependent variables

being measured in this study were properly and orderly arranged and punched in IBM cards for final treatment. These data cards were then treated by an IBM 360/70 computer with a special computer program designed for computing a multiple t test program for the two groups on each of the dependent variables being considered in this study. Finally, a computer program was devised to produce a cumulative matrix for each of the groups (re: figures 3 and 4, pages 39 and 40).

Figure 2

DESIGN MODEL

Group A

Discussion plus
models of each
of Flanders'
categories
using video tape
simulation
(26 S's)
Ed. 120

Observation
with Flanders'
Instrument

(Student
teaching)

t test to determine if
any significant differ-
ence exists in verbal
behavior between the
two groups

Group B

Discuss I.A.
only
(26 S's)
Ed. 120

Observation
with Flanders'
Instrument

(Student
teaching)

CHAPTER III

RESULTS AND DISCUSSION

The purpose of this chapter is to present the findings of this study. The data concerning the dependent variables is analyzed and interpreted, and the results of the tests of the hypotheses are presented. Each hypothesis is summarized and the data for the hypothesis testing are presented with references to appropriate tables and figures. This information is then used to determine if the null hypotheses stated in Chapter I can or cannot be rejected.

Hypothesis One

Hypothesis one states that there will be no difference between the percentages of direct teacher talk of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the direct teacher talk of student teachers trained through a symbolic modeling only concept in a modified Flanders System. Direct teacher talk is represented by Flanders' categories 5, lecturing; 6, giving directions; and 7, criticizing or justifying authority. This area is set forth in sub-hypotheses 1a, 1b, 1c, 1d, and 1e.

Data presented in Table 1 show the results of the statistical treatment comparing the experimental group and the control group on hypothesis 1a, which states that there will be no difference between the two groups of student teachers in lecturing, category 5.

TABLE I

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #5

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	15.45		7.39		
Control Group	28.98	13.53	9.92	5.5768	$p < .001$

The t ratio here resulted in statistical significance at the .001 level. The null hypothesis was rejected. Student teachers in the control group used significantly more lecturing than those in the experimental group.

Data presented in Table II show the results of the statistical treatment comparing the experimental and control groups on hypothesis 1b, which states that there will be no difference between the two groups of student teachers in giving directions, category 6.

TABLE II

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #6

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	1.66		1.12		
Control Group	2.85	1.19	1.65	3.0262	$p < .01$

The level of significance reached here was .01. The null hypothesis was rejected. Student teachers in the control group exhibited significantly more direction giving behavior than those in the experimental group.

Table III presents data showing the results of the statistical treatment comparing the experimental and control groups on hypothesis 1c, which states that there will be no difference between the two groups of student teachers in giving negative criticisms, reprimands, and corrective feedback, category #7.

TABLE III

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #7

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	0.60		0.51		
Control Group	1.22	.62	0.90	3.0704	$p < .01$

The null hypothesis here was rejected. The level of significance here reached the .01 level. The control group student teachers gave significantly more negative criticism, reprimands, and corrective feedback in their classrooms.

Data presented in Table IV show the results of the statistical treatment comparing the experimental and control groups on hypothesis 1d which states that there will be no difference between the two groups of student teachers in the extendedness of direct teacher talk. Extended direct teacher talk is made up of the 5-5 cell, the 6-6 cell, and the 7-7 cell of the interaction analysis matrix.

TABLE IV
t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON EXTENDED DIRECT TEACHER TALK*

	\bar{X}	Diff.	S.D.	t Ratio	Level of Significance
Experimental Group	12.88	18.80	2.33	3.32	$p < .01$
Control Group	26.60		4.89		

The table reveals a t ratio significant at the .01 level. The null hypothesis was rejected. The student teachers of the control group used significantly more extended direct talk in their classroom than the student teachers of the experimental group.

Hypothesis Two

Hypothesis two states that there will be no difference between the percentages of indirect teacher talk of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the indirect teacher talk of student teachers

*Based on matrix percentage

trained through a symbolic modeling concept in a modified Flanders System. Indirect teacher talk is represented by Flanders' categories 1, accepting student feelings; 2, praising or encouraging students; 3, accepting or using student ideas; and 4, asking questions. This area is set forth in sub-hypotheses 2a, 2b, 2c, 2d, and 2e.

Data presented in Table V show the results of the statistical treatment comparing the experimental group and the control group on hypothesis 2a, which states that there will be no difference between the two groups of student teachers in asking questions, category #4.

TABLE V

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #4

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	14.87		4.01		
Control Group	12.95	1.92	5.00	1.5326	$p < .10$

The t ratio in the table showed statistical significance at the .10 level, which is not acceptable to reject the null hypothesis. The null hypotheses was accepted. The two groups of student teachers did not differ significantly in asking questions in their classrooms.

Data presented in Table VI show the results of the statistical treatment comparing the experimental and the control groups on hypothesis 2b, which states that there will be no difference between the two groups

of student teachers in accepting and classifying student ideas, category 3.

TABLE VI

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #3

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	15.37	5.32	5.80	3.9092	$p < .001$
Control Group	10.05		3.81		

The null hypothesis here was rejected. The level of significance indicated by the t value reached .001. The experimental group student teachers accepted and used significantly more student ideas in their classrooms than the student teachers of the control group.

Table VII presents data showing the results of the statistical treatment comparing the experimental and control groups on hypothesis 2c, which states that there will be no difference between the two groups of student teachers in giving praise and encouragement, category #2.

TABLE VII

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #2

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	2.60	1.42	0.96	3.8178	$p < .001$
Control Group	1.18		1.16		

The table reveals a t ratio significant at the .001 level. The null hypothesis was rejected. The student teachers of the experimental group used significantly more praise and encouragement in their classrooms than did those student teachers of the control group.

Data presented in Table III show the results of the statistical treatment comparing the experimental group and the control group on hypothesis 2d, which states that there will be no difference between the two groups of student teachers in the acceptance of student feelings, category #1.

TABLE VIII

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #1

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Signifi- cance
Experimental Group	0.37		0.46		
Control Group	0.15	.22	0.24	2.1044	$p < .05$

The t ratio was significant at the .05 level. The null hypothesis was rejected. Experimental group student teachers accepted student feelings in their classrooms significantly more than the control group student teachers.

Data presented in Table IX show the results of the statistical treatment comparing the experimental and control groups on hypothesis 2c, which states that there will be no difference between the two

groups of student teachers in the extendedness of indirect teacher talk. Extended indirect teacher talk is made up of the 1-1 cell, 2-2 cell, 3-3 cell, and the 4-4 cell of the interaction analysis matrix.

TABLE IX

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON EXTENDED INDIRECT TEACHER TALK*

	<u>X</u>	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	12.65	3.65	6.31	9.1	p<.001
Control Group	9.10		8.89		

The t ratio in Table IX was significant at the .001 level. The null hypothesis was rejected. The experimental group student teachers used significantly more extended indirect teacher talk in their classrooms than did the control group student teachers.

Hypothesis Three

Hypothesis three states that there will be no difference in the percentages of student talk in classes taught by student teachers who have been trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the student talk in classes taught by student teachers trained through a symbolic modeling concept in a modified Flanders System. Student talk is represented by the modified Flanders' categories 8, elicited response; and 9, emitted

*Based on matrix percentage

response. This area is set forth in sub-hypotheses 3a, 3b, and 3c.

Table X presents data showing the results of the statistical treatment comparing the experimental and control groups on hypothesis 3a, which states that there will be no difference in the emitted student talk in the classes taught by the two groups of student teachers, category #9.

TABLE X

t TEST CONTRASTING THE VERBAL BEHAVIOR
OF STUDENT TEACHERS ON CATEGORY #9

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Signifi- cance
Experimental Group	20.60		10.07		
Control Group	13.02	7.58	5.97	3.3023	$p < .01$

The t ratio in the table showed statistical significance at the .01 level. The null hypothesis was rejected. There was significantly more emitted student response in the classrooms of the student teachers of the experimental group than in the classrooms of the student teachers of the control group.

Data presented in Table XI show the results of the statistical treatment comparing the experimental and control groups of the hypothesis 3b, which states that there will be no difference in the elicited student talk in response to narrow teacher questions or requests in the classes taught by the two groups of student teachers, category #8.

TABLE XI

t TEST CONTRASTING THE VERBAL BEHAVIOR OF
STUDENT TEACHERS ON CATEGORY #8

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Signifi- cance
Experimental Group	16.00		6.82		
Control Group	15.05	.95	7.47	0.4795	N. S.

The t ratio in the table was not significant. The null hypothesis was accepted. The experimental and control group student teachers' students did not differ significantly in elicited responses in the classroom.

Data presented in Table XII show the results of the statistical treatment comparing the experimental groups on hypothesis 3c, which states that there will be no difference in the length of specific episodes of student talk in the classes taught by the experimental and control groups of student teachers. Specific episodes of student talk is comprised of the 8-8 and 9-9 cells of the interaction analysis matrix.

TABLE XII

t TEST CONTRASTING THE TWO STUDENT TEACHER
GROUPS ON EXTENDED STUDENT TALK IN THEIR CLASSROOMS*

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Signifi- cance
Experimental Group	11.0		9.38		
Control Group	8.0	3.0	5.00	5.7	$p < .001$

The t ratio in the table showed statistical significance at the .001 level. The null hypothesis was rejected. In the experimental student teacher classrooms, there was significantly more episodes of student talk than in the control student teacher classrooms.

Hypothesis Four

Hypothesis four states that there will be no difference between the S/T ratio of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the S/T ratio of student teachers trained through a symbolic modeling concept in a modified Flanders System. The S/T ratio is found by dividing categories 8 and 9 by categories 1 through 7.

Data presented in Table XIII show the results of the statistical treatment comparing the experimental and control groups on hypothesis four.

TABLE XIII

t TEST CONTRASTING THE VERBAL BEHAVIOR OF
STUDENT TEACHERS ON THE S/T RATIO

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Signifi- cance
Experimental Group	0.802		0.409		
Control Group	0.514	.288	0.209	3.1973	$p < .01$

The null hypothesis was rejected. The t value reached the .01

level of significance. The S/T ratio was significantly greater in the classrooms of the student teachers of the experimental group than in the classrooms of the student teachers of the control group.

Hypothesis Five

Hypothesis five states that there will be no difference between the I/D ratio of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the I/D ratio of student teachers trained through a symbolic modeling concept. The I/D ratio is found by dividing categories 1, 2, 3 and 4 by categories 5, 6 and 7.

Data presented in Table XIV show the results of the statistical treatment comparing the experimental and control groups on hypothesis five.

TABLE XIV
t TEST CONTRASTING THE VERBAL BEHAVIOR OF
STUDENT TEACHERS ON THE I/D RATIO

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	2.270	1.419	1.302	5.1616	$p < .001$
Control Group	0.851		0.520		

The t ratio in the table reached statistical significance at the .001 level. The null hypothesis was rejected. The I/D ratio of the experimental group student teachers was significantly higher than the

I/D ratio of the control group student teachers.

Hypothesis Six

Hypothesis six states that there will be no difference between the revised i/d ratio of student teachers trained through a perceptual modeling concept in a modified Flanders System of Interaction Analysis and the revised i/d ratio of student teachers trained through a symbolic modeling concept in a modified Flanders System. The revised i/d ratio is found by dividing categories 1, 2, and 3 by categories 6 and 7.

Table XV presents data showing the results of the statistical treatment comparing the experimental and control groups on hypothesis six.

TABLE XV

t TEST CONTRASTING THE VERBAL BEHAVIOR OF
STUDENT TEACHERS ON THE REVISED i/d RATIO

	\bar{X}	Diff.	S.D.	<u>t</u> Ratio	Level of Significance
Experimental Group	15.068	11.157	16.015	3.4878	$p < .001$
Control Group	3.911		3.101		

The t ratio was significant at the .001 level. The null hypothesis was rejected. The experimental group student teachers had a significantly higher revised i/d ratio than the control group student teachers.

Summary

There were fifteen student teacher behavioral variables examined. Of these, all reached significance at the .05 level except two. Of these two, one reached significance at the .10 level. Seven of the variables reached the .001 level of significance. Five variables reached the .01 level of significance and one reached significance at the .05 level.

The matrices for the experimental and control groups are shown in figures 3 and 4, pages 39 and 40.

MATRIX FOR EXPERIMENT GROUP

	1	2	3	4	5	6	7	8	9	10	T
1	48	5	17	23	12	0	1	4	22	14	146
2	4	127	310	252	116	20	2	28	84	87	1,030
3	20	392	2,962	1,179	645	75	12	55	409	335	6,084
4	8	14	17	1,926	55	24	8	2,113	1,080	638	5,883
5	16	14	11	778	4,741	69	7	2	269	226	6,133
6	0	5	7	55	37	288	1	69	51	148	661
7	0	3	24	48	28	4	60	9	36	26	238
8	3	233	1,270	526	50	28	49	3,827	60	283	6,329
9	39	210	1,377	455	126	46	78	28	4,678	1,132	8,169
10	8	27	89	641	323	107	20	194	1,480	1,976	4,865
T	146	1,030	6,084	5,883	6,133	661	238	6,329	8,169	4,865	39,538
%	.40	2.60	15.40	14.50	15.50	1.70	.60	15.80	20.70	12.80	

Figure 3

MATRIX FOR CONTROL GROUP

	1	2	3	4	5	6	7	8	9	10	T
1	10	3	5	13	10	3	0	1	13	2	60
2	0	44	136	92	83	10	0	20	35	46	466
3	12	131	1,643	811	633	124	13	32	261	306	3,966
4	3	15	26	1,903	61	24	8	1,753	706	628	5,127
5	2	22	22	780	9,857	155	15	6	308	326	11,483
6	1	0	12	84	87	496	5	138	85	218	1,126
7	0	4	28	58	60	10	205	8	77	33	483
8	2	155	1,130	408	82	39	70	3,661	55	341	5,943
9	25	77	899	363	150	64	139	26	2,615	783	5,141
10	5	15	75	615	460	201	28	298	986	2,969	5,652
T	60	466	3,966	5,127	11,483	1,126	483	5,943	5,141	5,652	39,347
%	.15	1.2	10.1	13.0	29.0	2.65	1.2	15.2	13.0	14.3	

Figure 4

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This investigation was designed to determine the effects of a perceptual modeling concept, presented during the pre-service experience, on the verbal behaviors of student teachers in their student teaching experience. Within the framework the major purposes of the study were:

- (1) To determine the effects of a video tape modeling concept versus a verbal only presentation of an interaction analysis system on the verbal behaviors of student teachers.
- (2) To identify those categories or behaviors which were most affected by a perceptual modeling concept of a modified Flanders Interaction Analysis System.

The fifty-two subjects who comprised the sample for this study were drawn randomly from a larger population of one hundred sixty-five students in Education 120, a general methods course immediately preceding the student teaching experience at West Virginia University, the second semester of the 1969-70 school year. The sample consisted of fourteen social studies majors, fourteen language arts majors, fourteen science majors, and ten math majors.

The fifty-two pre-service teachers were randomly assigned to either the experimental group or the control group. The experimental group received instruction through perceptual modeling of the ten

categories of a modified Flanders Interaction Analysis System presented via video tape and discussion. The control group received instruction through discussion and other verbal means only concerning the concepts of the modified Flanders Interaction Analysis System.

During the student teaching experience, the subjects were observed in their assigned individual school situations by three trained and reliable observers utilizing a modified Flanders instrument for measuring their classroom verbal behavior. Verbal behavior was recorded in each of five observations of fifteen minutes each for each of the fifty-two subjects. Observations were scheduled at the beginning, the middle of, and toward the end of the student teaching experience. During the observation period, which spanned the student teaching experience, three reliability checks were conducted for the observers (re: appendix C). Before the observation period, the observers had participated in a training session, consisting of approximately twelve hours of interaction analysis instruction.

Upon completion of the data gathering, the interaction analysis raw data for each subject was preserved on IBM data cards. From these appropriate mean percent scores and ratios for each group were arrived at by means of a specially prepared computer program using the West Virginia University 360/70 computer. A matrix printout supplied other data for the two groups. All data needed for comparing the teacher behavior hypotheses were thus derived. A multiple t test program was used to compare the selected verbal behavior variables of the two groups.

Conclusions and Comments

1. As demonstrated in this study, there is evidence to support the theory that a single brief exposure to a model demonstrating a specific set of behaviors (in this case, Flanders' categories) was sufficient to bring about behavioral change in student teachers.

Each video tape episode lasted approximately three minutes. This supported the theory of Bandura (6) and the research of Young (90), that imitation can occur through video taped modeling techniques.

2. Student teachers who received a perceptual modeling concept presentation of interaction analysis during pre-service training did show significantly different verbal behavior in their classrooms than did those student teachers who received a symbolic modeling concept presentation of interaction analysis.

Video taped modeling techniques, as used in this study, structured through the categories of a system of interaction analysis were successful in modifying student teacher behavior in the experimental group.

The video tape modeling in this study served as the technique and the medium while a modified Flanders System of Interaction Analysis provided the content and the structure.

The student teachers of the experimental group differed significantly from the control group student teachers as follows:

1. The experimental student teachers used more acceptance of student feelings.

2. The experimental student teachers used more praise and encouragement of student action and behavior.
3. The experimental student teachers used more acceptance and clarification of student ideas.
4. The experimental student teachers used less lecture.
5. The experimental student teachers spent less time in giving directions.
6. The experimental student teachers spent less time in criticizing student behavior or actions and in giving corrective feedback.
7. The experimental student teachers stimulated more student initiated talk.
8. The experimental student teachers used less extended direct teacher talk.

9. The experimental student teachers used more indirect teacher talk.

10. The experimental student teachers used more extended indirect teacher talk.

As set forth in Chapter IV, all the null hypotheses except two were rejected. The data analyzed in this study showed that student teachers who participated in the modeling concept presentation of interaction analysis did show significantly different behavior patterns on thirteen of the variables tested. The difference ranged from the .05 level for one variable to the .001 level for six variables. Two of fifteen variables tested were rejected as not significant. There was not significant difference between the two groups concerning asking questions. However, since there was a significant difference between the two groups in favor of the experimental student teachers on emitted student response; this would tend to indicate that the experimental student teachers allowed greater student freedom to expand on the questions, inject their own ideas and generally discuss more. This may also indicate that experimental student teachers asked more divergent questions, since the group did not differ on elicited student talk.

3. As demonstrated by this study, the use of the video tape recorder to present modeling sequences of definite behaviors is an effective instructional technique and an effective means of transmitting

behavior.

The video tapes, once prepared, seemed to enhance the instructional process by providing visual images and cues relevant to each modeled behavior. This is supported by the research of Bandura (6) and by Allen (78).

In this study the perceptual modeling technique elicited more behavioral change than the symbolic modeling technique.

4. As demonstrated by this study, the student teachers which received a modeling concept presentation of interaction analysis incorporated more of the indirect behaviors, whereas the control group seemed to incorporate more of the direct behaviors.

This finding substantiated that of Lange (86) who recently found that reading teachers were influenced by a video tape demonstrating indirect teacher behavior over a similar video tape model demonstrating direct teacher behavior.

Recommendations for Teacher Education

The results of this study provide support for the following recommendations:

1. Modeling tapes should be developed in which specific teacher behaviors are presented with relevant cues for the teacher trainee.
2. A tape bank and laboratory should be developed in which the teacher trainee at any time would be able to secure for viewing video tapes demonstrating episodes of specific

teacher behavior.

3. Specific teacher behaviors or structure for modeling tapes should be provided by a system of interaction analysis. This would insure that the teacher trainee is observing a specific behavior which he can identify through an organized system. A study of an interaction analysis system should precede the video tape modeling. This would provide the teacher trainee with a system for both understanding and evaluating the modeling.
4. Modeling tapes demonstrating specific behaviors should be short. Three minutes of tape modeling a specific behavior seems to be enough for desired effects.
5. Since it is not always easy for the student teacher to divide the connection between the theory of teaching and the practice in the classroom, the methods courses and other pre-service courses should utilize video tape procedures to illustrate for the student teacher those abstract verbal descriptions.
6. Video tape equipment should be utilized in the teacher education program instead of the common sound film equipment, especially where limited funds mean only certain audio-visual aids can be secured. Though sound films of teaching situations have been good aids in demonstrating teacher behavior sequences, they are expensive and have

limited flexibility. A complete video tape outfit with camera gives more flexibility than the sound film since tapes can be revised; local classroom situations reproduced; student simulations taped; and video tapes can be stored the same as film for future use.

Recommendations for Further Research

In view of the findings of the present study, the following recommendations are set forth for further study and investigation.

1. The present study may be replicated using similar as well as different types of subjects. The basic purpose and design of the study should be retained.
2. The present study needs to be replicated with in-service teachers serving as subjects to ascertain if this is an effective means for shaping in-service teacher behavior.
3. This study took into account fifteen dependent variables. Other verbal behavioral variables may be compared in a study utilizing the present design.
4. A research design should investigate the duration and amount of behavioral change in student teachers who have received video tape modeling concepts of specific behaviors.
5. This research study used as subjects student teachers from the four content areas of social studies, science, language arts, and math. The study needs to be replicated

using subjects from one content area.

6. A research design needs to explore the effects of authoritative versus democratic models on student teachers.
7. A research design needs to explore why the experimental student teachers who received a perceptual modeling of interaction analysis incorporated more of the indirect rather than the direct modeled behaviors.

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APPENDIX A

Flanders Interaction Analysis System

CATEGORIES FOR INTERACTION ANALYSIS TO BE USED IN THIS STUDY*

TEACHER
TALK
INDIRECT

1. ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
 2. PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head.
 3. ACCEPTS OR USES IDEAS OF STUDENT: clarifying, building, or developing ideas or suggestions by a student. As teacher brings more of his own ideas into play, shift to category five.
 4. ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
-

TEACHER
TALK
DIRECT

5. LECTURING: giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions.
 6. GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.
 7. CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing, extreme self-reference.
-

STUDENT
TALK

- *8. ELICITED RESPONSES: includes conforming responses to narrow questions and requests and all responses which are highly predictable as a function of their having been previously associated with a specific stimulus or class of stimuli.
 - *9. EMITTED RESPONSES: includes responses to broad questions or requests which have not been previously associated with specific stimuli or a class of stimuli. Such responses often require student judgment or opinion and may be declarative statements not called for by teacher questions.
-
10. SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.
-

*The categories of verbal behavior used in this system are basically those used by Flanders in his ten category system of interaction analysis. Categories 8 and 9 represent the only changes in Flanders' category system.

APPENDIX B

Modeling Concepts of a Modified Flanders System of Interaction Analysis

MODELING CONCEPTS OF A MODIFIED
FLANDERS SYSTEM OF INTERACTION ANALYSIS

by Russell Fitzgerald

TAPING PROCEDURE

1. Camera on.
Introduction of the category, Dr. Murray.
2. Camera off.
Switch to introduction of the modeling concept.
3. Camera on.
Introduction of the modeling concept of the category.
4. Camera off.
Arrange scene setting for modeling concept.
5. Camera on.
Film the modeling concept via video tape recorder.
6. Camera off.
Arrange scene setting for next modeling concept.
7. Camera on.
Film the modeling concept.

NOTE: Follow steps 1, 2, 3, 4, 5, 6, and 7 until all ten Flanders categories are video taped.

CATEGORY I (Accepts Feeling)

Situation A: This is an eleventh grade geometry class. A student (boy) is very disturbed by an extremely difficult (or so he feels) problem which he is working at his seat. Then he expresses himself.

Student: "I like geometry, but I have to spend so much time on it. I wish I could catch on to it as easy as I do American History."

Teacher: "Sometimes we have to spend much time on some subject and relatively little time on others. You probably have certain subjects you find rather easy."

Situation B: A senior sociology class is in session. The chairman of a group for the purpose of discussing the value system of Americans is disturbed.

Student: "I can't seem to think today."

Teacher: "Of course you can't. After losing a close game like that one last night, I'd be uneasy too."

Situation C: A sophomore world history class is in session in this example. It is a very warm day and the teacher begins this way:

Teacher: "I know all of us are very warm and you may find it hard to think. I would like to be outside today, also."

CATEGORY II (Praises or Encourages)

Situation A: A twelfth grade elective course in African Studies is in progress. The students are involved in a unit on Sub-Saharan Africa and the instructor is leading the students in a discussion of how the apartheid policy in South Africa affects the everyday lives of the people. Note how the teacher uses praise.

Teacher: "Joe, how does the apartheid policy affect the lives of the people?"

Student: "The white people can vote but the non-whites are "kept from"--they can't vote, hold public office, demand equal pay or attend white universities."

Teacher: "Very good, Joe, I like the example you used. You evidently have done some outside reading in this area."

Situation B: Same class, same unit. Note the praise here.

Teacher: "Jane, how do you feel the apartheid policy affects the people's lives?"

Student: "I think it makes them feel inferior and destroys their self-confidence."

Teacher: "Do the rest of you like this idea as much as I do?"
"Isn't this a very important point?"

(Category II - Cont'd)

Situation C: Same class, same unit. Here the teacher encourages.

Teacher: "Bill, you've had your hand up a lot. How do you think the apartheid policy affects the lives of the South Africans?"

Student: "Well, economically, all the money ends up in one group of people's hands and ---"

Teacher: "Go on...."

CATEGORY III (Accepts or Uses Ideas of Student)

Situation A: This is a twelfth grade P.O.D. class. The students have been engaged in a discussion of international cooperation and understanding as a means for peace. Bill has just suggested that Woodrow Wilson had some very good ideas concerning international cooperation and that perhaps they ought to look at his ideas.

Student: "Wilson felt that a strong world organization composed of representatives of all nations acting to settle problems would end war."

Teacher: "Bill has just hit on an important point. This early League of Nations, as most of you know, was conceived by President Wilson, and eventually the idea grew into the United Nations."

Situation B: Here is a tenth grade algebra class. The topic is that of negative numbers which is often difficult for students. The teacher has a list of numbers ($5 + (-6 + (+7) + (-10))$) on the board.

Student: "I can't possibly see how you can get anything but a negative number if you add these."

Teacher: "All right, class. Jack has suggested that our answer must be a negative number. Let's proceed along this path."

CATEGORY IV (Asks Questions)

Situation A: A tenth grade world history class is engaged in a unit on Greek civilization. The teacher is questioning the two main city-states of Sparta and Athens.

Teacher: "From a political standpoint, how would you compare Sparta and Athens? Ru."

Student: "Sparta was an oligarchy and Athens was a democracy."

Situation B: An eleventh grade American history class is discussing the invasion of Britain by Hitler in World War II. The teacher speaks:

Teacher: "Class, why do you think Hitler did not invade Britain by sea immediately after the conquest of France?" Jim--"

Student: "Well, I think he thought the Luftwaffe could handle the job, but they didn't."

Situation C: A tenth grade English class has just finished a unit on Shakespeare. The students are ready to go on to a new unit. The teacher decides to give them a choice as to which they want to do next from the next four units, and opens the class in this way:

Teacher: "What topic would you like to start on next, class?"
(Silence)

Teacher: "Judy."

Student: "I think Medieval Literature would be interesting."

CATEGORY V (Lecturing)

Situation A: This is a tenth grade biology class. A unit on plant life is in progress. The students are listening as the teacher talks to them about plants.

Teacher: "Today we are going to take a look at the various parts of a typical plant. Most of you are familiar with plants but do you know how they function and live? Also, do you know that without plants, we could not live? Now the most important part of the plant is the root system which not only anchors the plant, but provides the plant with its nourishment."

Situation B: Here is a senior P.O.D. class. The students are involved in a unit on Communism. Today's discussion has centered around the Berlin problem as an example of the continuing struggle between Communism and Democracy. The teacher is talking.

Teacher: "Now I want all of you to think about the Berlin problem between now and tomorrow, and then come in with some ideas for a class discussion. Direct your thinking first to the cause for the problem, the possible solutions for the problem, and some ideas as to how this sort of situation may be prevented in the future."

CATEGORY VI (Giving directions)

Situation A: A senior chemistry class. The teacher is about to start the day's work. The students are engaged in a study of gases.

Teacher: "I would like all of you to open your workbook of experiments to demonstration #21, page 30, dealing with expansion of gases."

Situation B: A sophomore world history class. The teacher here is giving a simple direction through a question. The student is expected to comply.

Teacher: "John, will you please adjust the window shades?"

Student (Complies by adjusting the shades.)

Situation C: In the same sophomore world history class, the students are reading at their seats while the teacher migrates around the room. Mark is slouched in his seat reading. The teacher stops beside him.

Teacher: "Mark, please sit up straight in your seat."

Student: (Complies by sitting up straight.)

CATEGORY VII (Criticizing or Justifying Authority)

Situation A: Here is a senior English class. The teacher is passing back original compositions which the students have written. She is presently talking to one student as she hands back his paper.

Teacher: "Jack, I don't like the way you have been doing your work lately. You evidently are not giving as much thought to English as you are to football."

Situation B: This same senior English class has its usual clown as attention getter. Bill (the clown) is at his seat making noises on the desk top. The teacher criticizes him thusly:

Teacher: "Class, why are we in English today?" Are we here simply to see Bill perform at his seat as he pleases?"

Student: (Look of shame and embarrassment).

Situation C: This class in English may be a problem for here we see the teacher justify his authority.

Teacher: "Class, many of you are complaining about my marks on your papers. I feel that I have been more than lenient and many of you have been doing poor work in this area. Therefore, if you received critical comments, they are for your own good."

CATEGORY VIII (Elicited Responses)

Situation A: This is a tenth grade English class. Shakespeare is being discussed. The teacher is leading the discussion concerning Julius Caesar.

Teacher: "Betty, who delivered the funeral oration for Caesar?"

Student: "It was Mark Antony."

Situation B: An eleventh grade history class is involved in a discussion of the results of the Civil War. More specifically, the topic under consideration is how the aftermath of the war affected the South.

Teacher: "Joe, what does your author say was the most important effect of the war on the South?"

Student: "He says that the property destruction was the most important."

CATEGORY IX (Emitted Responses)

Situation A: Here we see a tenth grade algebra class. The teacher is giving the students an assignment from their texts. She begins----- (is interrupted).

Teacher: "For tomorrow, I want you-----"

Student: (Interrupts) "Are we having school tomorrow? I thought we were off tomorrow."

Situation B: Here is a ninth grade civics class. They are presently discussing the importance of voting. The teacher asks a question which allows students freedom in answering.

Teacher: "Did you know that in some nations, people are fined if they don't vote? Why do you think of that, Brad?"

Student: "Well, I think it might be a good idea because everybody should vote."

Situation C: A geometry class is in session here and the teacher is explaining the properties of a right angle at the board.

Teacher: "Here we see a typical right angle."

Student: (Interrupts) "I don't think the name of the angle is as important as the size of it. I would like to find out how to measure it."

CATEGORY X (Silence or Confusion)

Situation A: This is the start of a typical class. The teacher is in front of the room waiting for the attention of his students.

Students: (Talking to one another spontaneously)

Situation B: This is an economics class. The teacher has just given the students an assignment to do at their seats.

Students: (Working quietly with no talking in books)

Situation C: In this economics class, the teacher has just opened with a question.

Teacher: "Would someone please review the law of supply and demand briefly for us?"

Students: (Silence or pause);

APPENDIX C

Reliability Checks

RELIABILITY CHECK #1

Date - March 3, 1970

Observer and Key	Category										Total Dif- ference	Reliability of Observer
	1	2	3	4	5	6	7	8	9	10		
Tape Key	1.0	11.0	12.0	14.0	33.0	3.0	3.0	15.0	2.0	5.0	--	--
Russ	0.0	6.0	10.0	15.0	40.0	1.0	3.0	18.0	2.0	5.0	21.0	.74
Dave	0.0	7.0	12.0	20.0	32.0	2.0	2.0	15.0	3.0	7.0	17.0	.79
Joe	1.0	8.0	4.0	18.0	40.0	2.0	2.0	18.0	1.0	6.0	29.0	.75

$$Po = 100.0 - 18.0$$

$$Pe = 18$$

$$\frac{Po - Pe}{100 - Pe} = \text{Reliability}$$

NOTE: Pe values were obtained from the interaction analysis training tape used for the reliability check. The training tape matrix provided tally percentages.

Figure 10

RELIABILITY CHECK #2

Date - March 31, 1970

Observer and Key	Category										Total Dif- ference	Reliability of Observer
	1	2	3	4	5	6	7	8	9	10		
Tape Key	Percent of Tallies											
Russ	0.0	4.0	4.0	4.0	24.0	26.0	3.0	4.0	10.0	21.0	12.0	.85
Dave	0.0	2.0	5.0	7.0	18.0	29.0	2.0	6.0	10.0	21.0	14.0	.81
Joe	0.0	2.0	3.0	8.0	25.0	26.0	2.0	3.0	10.0	21.0	16.0	.80

$$Po = 100.0 - 16.0$$

$$Pe = 16$$

$$\frac{Po - Pe}{100 - Pe} = \text{Reliability}$$

NOTE: Pe values were obtained from the interaction analysis training tape used for the reliability check. The training tape matrix provided tally percentages.

Figure 11

RELIABILITY CHECK #3

Date - April 8, 1970

Observer and Key	Category										Total Dif- ference	Reliability of Observer
	1	2	3	4	5	6	7	8	9	10		
Tape Key	0.0	2.0	17.0	24.0	33.0	0.0	1.0	23.0	0.0	2.0	--	--
Russ	0.0	2.0	18.0	23.0	29.0	0.0	1.0	25.0	0.0	2.0	8.0	.90
Dave	0.0	2.0	15.0	24.0	34.0	0.0	0.0	25.0	0.0	2.0	7.0	.91
Joe	0.0	2.0	19.0	18.0	33.0	0.0	1.0	25.0	0.0	2.0	8.0	.90

Po = 100.0 - 20

Pe = 20

$$\frac{Po - Pe}{100 - Pe} = \text{Reliability}$$

NOTE: Pe values were obtained from the interaction analysis training tape used for the reliability check. The training tape matrix provided tally percentages.

Figure 12